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INDIANA UNIVERSITY

Preparation and Performance of Teachers

By
LLOYD S. STANDLEE
and
W. JAMES POPHAM

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by

Lloyd S. Standlee
and
W. James Popham

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INTRODUCTION[1]

The preparation and performance of graduates of the teacher-education programs in our various colleges and universities have always been matters of concern to both lay people and professional educators. Through the years both groups have had champions who were quite vocal regarding the various controversies arising from this concern.

A recurrent question regards the quality of preparation and performance of graduates from large universities as contrasted to those from small colleges. In spite of the fact that all graduates of teacher-education programs in a particular state now meet the standard licensing requirements of that state, one still hears statements indicating that the question of equal preparation is a current one. One may hear, for example, that graduates from a large university are better prepared because of wider course offerings, better facilities and faculty, etc. On the other hand, one may hear that the graduates from small colleges are better prepared because of more individual attention, group participation, etc.

Another frequently raised question regards the relative merit of professional courses as contrasted to that of academic courses in preparing teachers. This question is currently a very popular one, as evidenced by the numerous articles appearing in daily newspapers, weekly news magazines, educational journals, etc.

The critics of professional education claim that teachers must take so many professional education (pedagogy) courses that there is no room left for subject-matter preparation. In short, the public school teacher is being taught how to teach to the exclusion of being taught more in his subject matter field.

The defenders of professional education claim that the teaching of children and young adolescents is a profession and requires professional training. Academic competency is necessary but not sufficient. The public school teacher must have the professional skills that are taught in the professional courses--psychology, methods, practice teaching, etc. The present licensing requirements are necessary to guarantee that teachers will have these skills, without which the teacher might have a deleterious effect upon pupils.

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[1]The research reported herein was performed pursuant to a contract with the United States Office of Education, Department of Health, Education, and Welfare. The present report resulted from the combination of two separate research reports submitted to the above office. (See bibliography.)

PURPOSE

The present investigation was undertaken in order to supply evidence needed to determine whether there is a relationship between (1) teacher preparation and size and type of graduating institution; (2) teacher performance and size and type of institution; and (3) teacher preparation and teacher performance.

PROCEDURE

Sample. The subjects consisted of 880 public school teachers who made up the total population of 1954 graduates (bachelor's degree) in all 24 Indiana colleges and universities with standard accreditation for teacher education. These subjects were teaching in Indiana public schools in the 1956-1957 academic year.

The information necessary for determining the sample was taken from records of the State Department of Public Instruction. The record of every public school teacher for the 1956-1957 academic year was checked to determine whether he had graduated from an Indiana college or university in the 1954 calendar year. This procedure was found to be much more accurate than working from records of the graduating institution, since the graduating institution does not know where a teacher is three years after graduation unless that teacher has supplied it with the information.

Data sources. The data sources consisted of (1) the Minnesota Teacher Attitude Inventory (MTAI), (2) a teacher-rating form, (3) a questionnaire, (4) academic transcripts, and (5) state department records.

The MTAI is claimed by its authors[2] to discriminate between those teachers who do and those who do not have good rapport with their pupils. Since teaching is highly dependent upon pupil-teacher rapport, the MTAI was considered to be an indirect measure of teacher effectiveness.

The teacher-rating form[3] was constructed by the present authors and was designed to obtain a single index of a teacher's over-all teacher effectiveness. In an attempt to avoid at least partially the usual clustering of ratings at the high end of a rating scale, the scale was titled "Teacher Ranking Form." The principal was instructed to compare the teacher

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[2]Cook, W. W.; Leeds, C. H.; and Callis, R., Minnesota Teacher Attitude Inventory.

[3]Popham, W. J., and Standlee, L. S., Out-of-School Activities and Professional Performance of Teachers, Bulletin of the School of Education, Indiana University, vol. 34, no. 2, Bloomington, July, 1958.

listed on each form he was given with others with whom he had worked, and to place that teacher in the appropriate decile rank-order position. Nevertheless, it was still a rating form, subject to the usual limitations.

Only a few data were taken from the questionnaire, as it was constructed and administered for another purpose.[4]

Data regarding the undergraduate preparation of teachers were taken from transcripts furnished by the graduating college or university.

A limited amount of background information was transcribed from records of the State Department of Public Instruction.

All measuring instruments were administered by mail. The mailing was accomplished in the Spring of 1957 (three years following graduation). Two separate follow-up letters, plus measuring instruments, were sent to non-respondents. The per cent of returns was 83.9 per cent for data supplied by teachers (MTAI and questionnaire) and 95.1 per cent for data supplied by principals (rating form). Transcripts were obtained for all subjects in the sample.

Analyses. In analyzing the data, colleges and universities were grouped into four categories: large public institutions (19,874 to 13,776 students), small public institutions (4,362 to 2,841 students), large private institutions (3,733 to 1,974 students), and small private institutions (961 to 205 students). MTAI scores were grouped into five categories: 150 to 61, 60 to 21, 20 to -19, -20 to -59, and -60 to -150. (A high MTAI score means that a teacher is more likely to have good rapport with his pupils, a low score the converse.) Principals' ratings were grouped into three categories: 100 to 90, 80 to 70, and 60 to 10. (A high rating means that the principal judges a teacher to be superior in over-all teacher effectiveness, a low rating the converse.) Other variables were grouped so as to retain a maximum refinement of classification and at the same time avoid a large number of cells with trivial frequencies. Frequency data for the above groupings were analyzed by means of the chi square statistical technique.

In the case of professional and academic preparation, separate analyses were conducted for elementary and secondary teachers, and for the latter group separate analyses were conducted for teachers teaching in only one subject-matter area and for teachers teaching in more than one subject-matter areas. The importance of these separate analyses becomes evident when one considers that a teacher teaching several different subjects may, even though not adequately trained in any one of them, show many more college credits in his teaching areas than will an exceptionally well prepared teacher teaching only one subject.

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[4] Ibid.

Professional preparation was defined as any course in education or psychology. For elementary teachers, academic preparation was defined as course work in the following subject-matter areas: language arts, social studies, natural science, physics, mathematics, arts, and technical subjects. This was related to type of graduating institution but not to professional performance.[5] For secondary teachers, academic preparation was defined as course work in the particular subject-matter area that the teacher was currently teaching. This was related to type of graduating institution and to professional performance.

The basic units of undergraduate preparation were credit hours and credit points. Quarter hours were converted to semester hours. Credit points were computed by multiplying credit hours by grade weight[6] and summing. This index combining quantity and quality was thought to be preferable to the more conventionally used credit-point ratio. In the latter index a teacher with 12 hours of A in science would have the same credit-point ratio as a teacher with one hour of A in science, but the two teachers certainly would not have equal preparation in science. By the same reasoning, the credit-point index was also thought to be superior to the credit-hour index. A teacher with 12 hours of A in a particular subject-matter area would not have the same preparation as the teacher with 12 hours of D. Nevertheless, the credit-hour index was retained, for it has the advantage of complete objectivity, which may be lacking in both credit points and credit-point ratio.

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[5]Elementary teachers do not have a teaching area in the sense that secondary teachers do. It would be impossible, then, to relate their academic preparation in a particular area to their performance in that area. Also, the variability in total academic preparation is fairly restricted by present graduating requirements, which would reduce the likelihood of obtaining a relationship between academic preparation and professional performance. Secondary teachers, on the other hand, do have at least one specific teaching area, and they have considerable freedom in the number of credit hours they take in their teaching area. By defining academic preparation as course work in the subject's teaching area, and ignoring the subject matter involved, it was impossible to obtain a single index of academic preparation for all secondary subjects. Thus, analyses to determine relationships between academic preparation and professional performance were accomplished for secondary teachers only.

[6]A = 3, B = 2, C = 1, D = 0, E or F = -1.

RESULTS

Prior to analyzing the relationship between size and type of graduating institution, and preparation and performance of graduates, it would seem appropriate to ask whether the graduates were different before they entered the institutions from which they were graduated and whether they are currently in substantially different personal or teaching situations? Such factors might be confounded in any relationships found in the present study. Accordingly, data are presented regarding certain personal and teaching background variables, as related to type of graduating institution.

Personal Background

Sex. There was a significant relationship between teachers' sex and type of graduating institution. Table 1 reveals that a higher proportion of males than of females went to public teacher-education institutions. Even here, however, females outnumbered males by almost two to one.

TABLE 1. PERCENTAGE DISTRIBUTION OF TEACHERS BY SEX, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Sex	Type of institution			
	Public		Private	
	Large (228)	Small (316)	Large (153)	Small (176)
Male	35	34	23	28
Female	65	66	77	72

$X^2 = 8.74$ df = 3 p less than .05

Age. There was a significant relationship between teachers' age and type of graduating institution. Inspection of Table 2 indicates that a higher proportion of older people than of younger tended to receive their bachelor's degree from private teacher-education institutions. The modal age for graduates of all types of institutions was 20 to 29 years (three years after graduation).

TABLE 2. PERCENTAGE DISTRIBUTION OF TEACHERS BY AGE, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Age	Type of institution			
	Public		Private	
	Large (228)	Small (316)	Large (153)	Small (175)
20-29	71	65	50	60
30-39	14	9	13	12
40-49	6	12	18	10
50-59	7	12	16	15
60 or over	2	2	4	3

$X^2 = 33.48$ df = 12 p less than .01

Marital status. There was a significant relationship between teachers' marital status and type of graduation institution. Table 3 indicates that a higher proportion of teachers from the intermediate size of teacher-education institution (small public and large private institutions) were married. Less than half of any group were single, divorced, or widowed, with very few being in the latter two categories.

TABLE 3. PERCENTAGE DISTRIBUTION OF TEACHERS BY MARITAL STATUS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Marital status	Type of institution			
	Public		Private	
	Large (195)	Small (256)	Large (125)	Small (158)
Single	34	26	22	40
Married	60	69	69	56
Divorced	2	2	3	1
Widowed	4	3	6	3

$X^2 = 17.95$ df = 9 p less than .05

Religious affiliation. There was no significant relationship between teachers' religious affiliation and type of graduating institution. Table 4 indicates that a large majority of all teachers were Protestant.

TABLE 4. PERCENTAGE DISTRIBUTION OF TEACHERS BY RELIGIOUS AFFILIATION, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Religious affiliation	Type of institution			
	Public		Private	
	Large (194)	Small (258)	Large (124)	Small (158)
None	1	1		1
Catholic	12	9	7	15
Protestant	84	88	92	85
Jewish	1			
Other	2	2	1	

$X^2 = 14.04$ df = 12 p greater than .10

Parental occupation. There was no significant relationship between teachers' parental occupation and type of graduating institution. Inspection of Table 5 indicates that for all types of teacher-education institutions the teachers' parents were fairly evenly representative of the professional person; proprietor, manager, or official; skilled worker or foreman; and semi-skilled worker, with relatively few having been in the clerk, salesman, or kindred worker group, or the unskilled worker group.

TABLE 5. PERCENTAGE DISTRIBUTION OF TEACHERS BY PARENTAL OCCUPATION, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Parental occupation	Type of institution			
	Public		Private	
	Large (187)	Small (243)	Large (121)	Small (150)
Professional person	22	16	15	21
Proprietor, manager, or official	25	20	27	23
Clerk, salesman, or kindred worker	9	12	13	10
Skilled worker or foreman	23	23	21	21
Semi-skilled worker	13	20	15	19
Unskilled worker	8	10	8	6

$X^2 = 12.27$ df = 15 p greater than .10

Parental income. There was a significant relationship between teachers' parental income and type of graduating institution. Table 6 indicates that graduates of larger teacher-education institutions tended to have parents with a higher income than did the graduates of smaller teacher-education institutions. The modal income for all teachers' parents was $3,000 to $3,999.

TABLE 6. PERCENTAGE DISTRIBUTION OF TEACHERS BY PARENTAL INCOME, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Parental income	Type of institution			
	Public		Private	
	Large (177)	Small (242)	Large (121)	Small (140)
$2,999 or less	16	16	21	20
$3,000-$3,999	25	35	29	34
$4,000-$4,999	19	19	16	20
$5,000-$5,999	11	14	7	6
$6,000-$6,999	8	6	9	7
$7,000-$7,999	4	3	4	1
$8,000-$8,999	3	3	2	4
$9,000-$9,999	2	2	2	7
$10,000 or more	11	2	8	1

$X^2 = 46.76$ df = 24 p less than .01

High School Background

Language arts. There was a significant relationship between teachers' high school credits in language arts and type of graduating institution. Table 7 indicates that a higher proportion of graduates from large private teacher-education institutions had two or fewer credits in language arts. The majority of all teachers had six or more credits in language arts.

TABLE 7. PERCENTAGE DISTRIBUTION OF TEACHERS BY HIGH SCHOOL CREDITS IN LANGUAGE ARTS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credits	Type of institution			
	Public		Private	
	Large (210)	Small (292)	Large (133)	Small (157)
None	3	2	11	2
One		1	1	
Two		1	1	
Three	9	8	5	11
Four	9	11	7	11
Five	15	23	19	13
Six	32	25	25	33
Seven	21	15	22	19
Eight	6	6	5	6
Nine or more	5	10	6	4

$X^2 = 53.98$ df = 27 p less than .01

Social studies. There was a significant relationship between teachers' high school credits in social stuides and type of graduating institution. Table 8 indicates that a higher proportion of graduates from small public teacher-education institutions had six or more credits in social studies, and a higher proportion of graduates from large public and private institutions had one or fewer credits in social studies. The majority of all teachers had three credits in social studies.

TABLE 8. PERCENTAGE DISTRIBUTION OF TEACHERS BY HIGH SCHOOL CREDITS IN SOCIAL STUDIES, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credits	Type of institution			
	Public		Private	
	Large (210)	Small (292)	Large (133)	Small (157)
None	10	2	11	3
One	1	2	6	1
Two	14	14	13	18
Three	61	61	56	64
Four	6	12	10	8
Five	6	3	5	4
Six		4		1
Seven	1	1		1
Eight		1		
Nine or more		1		

$X^2 = 66.95$ df = 27 p less than .01

Science and mathematics. There was a significant relationship between teachers' high school credits in science and mathematics and type of graduating institution. Table 9 indicates that a higher proportion of graduates from large private teacher-education institutions than from the other schools had two or fewer credits in science and mathematics. Three fourths or more of all teachers had from three to five credits in science and mathematics.

TABLE 9. PERCENTAGE DISTRIBUTION OF TEACHERS BY HIGH SCHOOL CREDITS IN SCIENCE AND MATHEMATICS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credits	Type of institution			
	Public		Private	
	Large (210)	Small (292)	Large (133)	Small (157)
None	3	2	11	2
One		1		1
Two	5	7	5	2
Three	30	30	32	31
Four	20	16	24	18
Five	26	29	23	28
Six	7	5	2	10
Seven	4	4	2	8
Eight	3	2	1	
Nine or more	1	3	1	1

$X^2 = 65.82$ df = 27 p less than .01

Technical courses. There was a significant relationship between teachers' high school credits in technical courses and type of graduating institution. Table 10 indicates that a higher proportion of graduates from private teacher-education institutions than from the other types of schools had two or fewer credits in technical courses. The majority of teachers from public institutions had five or more credits in technical courses, and about half of those from private institutions had three or fewer credits in technical courses.

TABLE 10. PERCENTAGE DISTRIBUTION OF TEACHERS BY HIGH SCHOOL CREDITS IN TECHNICAL COURSES, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credits	Type of institution			
	Public		Private	
	Large (205)	Small (292)	Large (133)	Small (157)
None	4	3	14	11
One	4	9	9	11
Two	9	6	11	6
Three	21	15	19	21
Four	11	8	10	8
Five	21	17	17	14
Six	6	8	5	4
Seven	16	14	10	12
Eight	4	7	2	3
Nine or more	4	13	4	8

$X^2 = 67.50$ df = 27 p less than .01

Teaching Background

Teaching level. There was no significant relationship between the teaching level of teachers and type of graduating institution. Table 11 indicates that the graduates of all types of teacher-education institutions were fairly evenly dispersed through the elementary and secondary grades, with relatively few teaching in kindergarten.

TABLE 11. PERCENTAGE DISTRIBUTION OF TEACHERS BY TEACHING LEVEL, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Teaching level	Type of institution			
	Public		Private	
	Large (195)	Small (258)	Large (126)	Small (157)
Kindergarten	5	2	4	2
Grades 1-3	27	32	43	34
Grades 4-6	26	22	22	24
Grades 7-9	21	21	14	23
Grades 10-12	22	23	17	17

$X^2 = 15.51$ df = 12 p greater than .10

Teaching salary. There was a significant relationship between the salaries of teachers and type of graduating institution. Table 12 indicates that a smaller proportion of graduates from small private teacher-education institutions than from the other schools were receiving a salary of $4,000 or more. The modal salary was $4,000-$4,499 for all except the graduates of small private institutions, whose modal salary was 3,500-$3,999.

TABLE 12. PERCENTAGE DISTRIBUTION OF TEACHERS BY SALARY, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Teaching salary	Type of institution			
	Public		Private	
	Large (228)	Small (316)	Large (153)	Small (176)
$2,999 or less	2	1	2	6
$3,000-$3,499	5	6	8	6
$3,500-$3,999	32	36	24	43
$4,000-$4,499	46	41	42	31
$4,500-$4,999	11	10	15	8
$5,000-$5,499	2	5	6	2
$5,500-$5,999	1	1	3	2
$6,000 or more		1	1	2

$X^2 = 45.91$ df = 21 p less than .01

Teaching experience. There was a significant relationship between the experience of teachers and type of graduating institution. Table 13 indicates that a higher proportion of graduates from large public teacher-education institutions were new teachers, that is, they had had two or fewer years of experience. The highest proportion of all graduates, of course, were new teachers, yet a surprising number of graduates had had several years of teaching experience before receiving the bachelor's degree.

TABLE 13. PERCENTAGE DISTRIBUTION OF TEACHERS EXPERIENCE, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Years of teaching experience	Type of institution			
	Public		Private	
	Large (233)	Small (316)	Large (154)	Small (176)
2 or less	74	60	52	67
3-5	12	14	11	8
6-8	2	2	6	3
9-11	1	3	1	1
12-14	2	5	5	3
15-17	3	6	9	3
18-20	3	3	6	8
21 or more	3	7	10	7

$X^2 = 52.09$ df = 21 p less than .01

School size. There was a significant relationship between the size of school in which the teachers taught and type of graduating institution. Table 14 indicates that a higher proportion of graduates from large public teacher-education institutions were teaching in schools with 750 or more pupils. This was the modal size of school for all graduates.

TABLE 14. PERCENTAGE DISTRIBUTION OF TEACHERS' SCHOOL SIZE, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Number of pupils in school	Type of institution			
	Public		Private	
	Large (228)	Small (316)	Large (153)	Small (176)
149 or less	1	4	5	7
150-249	7	13	12	9
250-349	11	17	12	15
350-449	13	15	13	20
450-549	12	12	12	10
550-649	13	12	12	9
650-749	5	6	10	7
750 or more	37	21	23	23

$X^2 = 41.20$ df = 21 p less than .01

Community size. There was a significant relationship between the size of community in which the teachers taught and type of graduating institution. Table 15 indicates that a higher proportion of graduates from large public and private teacher-education institutions than from other schools were teaching in communities with a population of 75,000 or more. The modal community size was a population of 2,499 or less for all except graduates of large private institutions, whose modal community size was 150,000 or more.

TABLE 15. PERCENTAGE DISTRIBUTION OF TEACHERS BY COMMUNITY SIZE, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Population of community	Type of institution			
	Public		Private	
	Large (228)	Small (316)	Large (153)	Small (176)
2,499 or less	19	32	25	33
2,500- 9,999	16	22	17	20
10,000- 24,999	10	9	8	13
25,000- 49,999	16	13	7	13
50,000- 74,999	2	10	1	1
75,000- 99,999	2	1	1	
100,000-124,999	6	1	1	3
125,000-149,999	15	7	11	7
150,000 or more	14	5	28	10

$X^2 = 134.55$ df = 24 p less than .01

Teaching concentration of secondary teachers. There was a significant relationship between the teaching concentration of secondary and special teachers and type of graduating institution. Table 16 indicates that a higher proportion of graduates from public teacher-education institutions were teaching in only one subject-matter area. The majority of all teachers taught in only one subject-matter area, but as many as one fourth of the graduates from public institutions and almost one half of those from private institutions taught in two or more subject-matter areas.

TABLE 16. PERCENTAGE DISTRIBUTION OF SECONDARY AND SPECIAL TEACHERS BY TEACHING CONCENTRATION, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Number of teaching areas	Type of institution			
	Public		Private	
	Large (111)	Small (121)	Large (49)	Small (67)
One	73	74	51	48
Two	25	21	47	43
Three or more	2	5	2	9

$X^2 = 24.82$ df = 6 p less than .01

There was a significant relationship between the total teaching areas of secondary and special teachers and type of graduating institution. Table 17 indicates that a higher proportion of graduates from private teacher-education institutions were teaching language arts, physical education, and mathematics, and a higher proportion of graduates from public institutions were teaching vocational subjects. The modal teaching areas were not based upon strong differences. There was, rather, a fairly wide scattering of teaching areas.

TABLE 17. PERCENTAGE DISTRIBUTION OF SECONDARY AND SPECIAL TEACHERS BY TOTAL TEACHING AREAS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Total teaching areas	Type of institution*			
	Public		Private	
	Large (138)	Small (176)	Large (68)	Small (106)
Language arts	17	14	24	19
Social studies	14	9	9	14
Natural science	4	2	1	8
Physical science	1	2		3
General science	8	5	6	8
Mathematics	4	9	12	10
Art	7	2	3	2
Music	4	8	10	8
Business	5	10	7	6
Vocational subjects	18	20	6	1
Physical education	14	14	22	18
Safety	4	5		5

$X^2 = 50.56$ df = 33 p less than .05

*This number is larger than the number of teachers because some teachers taught in more than one area.

There was also a significant relationship between the single teaching area of secondary and special teachers and type of graduating institution. Table 18 indicates that a higher proportion of graduates from private teacher-education institutions were teaching language arts only, music only, or mathematics only, and a higher proportion of graduates from public institutions were teaching vocational subjects only or social studies only. The proportion of teachers teaching science only was low for all graduating institutions.

TABLE 18. PERCENTAGE DISTRIBUTION OF SECONDARY AND SPECIAL TEACHERS BY SINGLE TEACHING AREA, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Single teaching area	Type of institution			
	Public		Private	
	Large (81)	Small (89)	Large (25)	Small (32)
Language arts	21	18	28	34
Social studies	11	8	4	6
Natural science				3
Physical science		1		
General science	6	2		3
Mathematics	4	6	12	13
Art	10	4	8	
Music	6	13	24	16
Business	7	13	4	13
Vocational subjects	19	27	8	3
Physical education	14	6	12	9
Safety	2	1		

$X^2 = 53.37$ df = 3 p less than .05

Finally, there was a significant relationship between the teaching area of secondary and special teachers and teaching concentration. Table 19 indicates that a high proportion of music and art teachers were teaching no other subjects, and a low proportion of science and safety teachers were teaching no other subjects. There were not enough teachers in any one teaching area to warrant separate analyses of teaching concentration according to type of graduating institution.

TABLE 19. FREQUENCY DISTRIBUTION OF SECONDARY AND SPECIAL TEACHERS BY TEACHING CONCENTRATION, ACCORDING TO TEACHING AREA

Teaching area	Subjects taught other than one indicated			
	None	One	Two or more	Total
Language arts	51	29	4	84
Social studies	19	30	6	55
Natural science	1	12	6	19
Physical science	1	7		8
General science	8	20	4	32
Mathematics	15	19	5	39
Art	14	4		18
Music	28	7		35
Business	23	13		36
Vocational subjects	43	21	2	65
Physical education	22	44	12	78
Safety	3	11	5	19
Total	227	217	44	488

$X^2 = 124.83$ df = 22 p less than .01

Over-All Preparation of Teachers

In analyzing the relationship between preparation of graduates and size and type of graduating institution, data regarding over-all, professional, and academic credit hours and credit points, according to type of graduating institution, were studied.

Credit hours. There was a significant relationship between the total undergraduate credit hours of teachers and type of graduating institution. Table 20 indicates that a higher proportion of graduates from small public teacher-education institutions than from the other schools had graduated with 130 or more credit hours. Only one fourth of the teachers from small public institutions had graduated with close to the minimum number of credit hours (129 or less), while about one half of those from the other types of institutions had graduated with close to the minimum number of credit hours.

TABLE 20. PERCENTAGE DISTRIBUTION OF TEACHERS BY TOTAL UNDERGRADUATE CREDIT HOURS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (210)	Small (292)	Large (133)	Small (157)
119 or less	2			
120-129	45	25	51	51
130-139	23	46	37	31
140-149	17	17	8	8
150-159	6	6	2	7
160-169	5	2	2	1
170 or more	2	4	1	2

$X^2 = 80.95$ df = 24 p less than .01

Transferred credit hours. There was a significant relationship between the number of transferred undergraduate credit hours the teachers had made and type of graduating institution. Table 21 indicates that a higher proportion of graduates from large private teacher-education institutions than from the other schools had transferred 20 or more credit hours, and a higher proportion of them had transferred 80 or more credit hours. The majority of all graduates had transferred nine or fewer hours.

TABLE 21. PERCENTAGE DISTRIBUTION OF TEACHERS BY TRANSFERRED UNDERGRADUATE CREDIT HOURS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (210)	Small (292)	Large (133)	Small (157)
9 or less	67	64	56	71
10-19	5	9	4	1
20-29	4	7	5	3
30-39	3	4	4	6
40-49	4	4		4
50-59	5	1	3	3
60-69	5	3	8	4
70-79	5	4	5	4
80-89	2	1	8	
90 or more		4	9	

$X^2 = 74.33$ df = 27 p less than .01

Credit points. There was no significant relationship between the total undergraduate credit points of the teachers and type of graduating institution. Table 22 indicates that graduates from all four types of teacher-education institutions were fairly widely scattered in the number of credit points they had at graduation, as they had obtained from 119 or fewer to 390 or more.

TABLE 22. PERCENTAGE DISTRIBUTION OF TEACHERS BY TOTAL UNDERGRADUATE CREDIT POINTS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (210)	Small (292)	Large (133)	Small (157)
119 or less	1			
120-134	2		1	3
135-149	5	2	3	6
150-164	8	3	7	10
165-179	9	9	12	8
180-194	7	10	10	6
195-209	11	11	8	8
210-224	10	9	11	10
225-239	7	9	8	6
240-254	9	9	9	11
255-269	8	11	7	7
270-284	7	6	11	5
285-299	7	4	4	4
300-314	4	2	2	3
315-329	2	4	3	4
330-344	1	2	2	3
345-359	2	2		3
360-374		1	2	2
375-389		1	1	1
390 or more		3	1	3

$X^2 = 61.70$ df = 57 p greater than .10

Credit point ratio. There was no significant relationship between the undergraduate credit-point ratio of the teachers and type of graduating institution. Table 23 indicates that graduates from all four types of teacher-education institutions were fairly widely scattered in credit-point ratio in that they had obtained a credit-point ratio of from .99 or less to 2.80 or more.

TABLE 23. PERCENTAGE DISTRIBUTION OF TEACHERS BY UNDERGRADUATE CREDIT-POINT RATIO, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit-point ratio	Type of institution			
	Public		Private	
	Large (210)	Small (292)	Large (133)	Small (157)
0.99 or less	3	2	1	
1.00-1.09	4	3	2	4
1.10-1.19	9	3	4	6
1.20-1.29	6	6	5	10
1.30-1.39	10	10	9	7
1.40-1.49	5	7	14	4
1.50-1.59	11	9	11	7
1.60-1.69	7	8	8	7
1.70-1.79	7	11	11	8
1.80-1.89	4	9	5	10
1.90-1.99	9	8	5	8
2.00-2.09	6	8	8	6
2.10-2.19	5	2	5	4
2.20-2.29	4	2	5	4
2.30-2.39	4	3	2	4
2.40-2.49	2	3		2
2.50-2.59	4	3	2	2
2.60-2.69	1	2	2	4
2.70-2.79		1		3
2.80 or more		1	2	1

$X^2 = 73.88$ df = 57 p greater than .10

Professional Preparation

Elementary teachers. There was a significant relationship between the number of undergraduate credit hours the elementary teachers had in professional training and type of graduating institution. Table 24 indicates that a higher proportion of graduates from small private teacher-education institutions than from the other schools had 40 or fewer credit hours of professional training and a smaller proportion of the same group had 61 or more credit hours of professional training, while a higher proportion of graduates from large institutions (public and private) had 41 or more credit hours. The majority of elementary teachers, except for those graduating from small private institutions, had 41 or more credit hours of professional training.

TABLE 24. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN PROFESSIONAL TRAINING, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (92)	Small (93)
10 or less	3		5	5
11-20	6	3	5	5
21-30	8	17	3	14
31-40	12	27	17	30
41-50	45	23	32	32
51-60	17	20	22	9
61-70	5	6	10	
71-80	1	2	4	2
81-90	2	1		
91 or more	1	2	1	2

$X^2 = 64.44$ df = 27 p less than .01

There was also a significant relationship between the number of undergraduate credit points elementary teachers had in professional training and type of graduating institution. Table 25 indicates that a higher proportion of graduates from large teacher-education institutions (public and private) had 71 or more credit points. The majority of elementary teachers, except those graduating from small private institutions, had 71 or more credit points of professional training.

Secondary teachers. There was no significant relationship between the number of undergraduate credit hours the secondary teachers had in professional training and type of graduating institution. Table 26 indicates that the majority of secondary teachers had 21 or more credit hours of professional training.

TABLE 25. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN PROFESSIONAL TRAINING, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (94)	Small (94)
10 or less	1	1	2	3
11-20	4	1	7	4
21-30	5	1	1	4
31-40	3	3	2	6
41-50	4	8	2	5
51-60	7	11	3	12
61-70	5	14	12	16
71-80	13	17	13	14
81-90	12	13	18	12
91 or more	48	31	39	23

$X^2 = 52.06$ df = 27 p less than .01

TABLE 26. PERCENTAGE DISTRIBUTION OF SECONDARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN PROFESSIONAL TRAINING, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (100)	Small (119)	Large (41)	Small (65)
10 or less	8		7	8
11-20	15	25	15	32
21-30	49	56	59	48
31-40	17	11	15	6
41-50	7	5		5
51-60	2	2	5	2
61-70	1	1		
71-80				
81-90	1			
91 or more				

$X^2 = 23.27$ df = 27 p greater than .10

There was, however, a significant relationship between the number of undergraduate credit points the secondary teachers had in professional training and type of graduating institution. Table 27 indicates that a higher proportion of graduates from small private teacher-education institutions had 40 or fewer credit points. The majority of secondary teachers had 41 or more credit points of professional training.

TABLE 27. PERCENTAGE DISTRIBUTION OF SECONDARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN PROFESSIONAL TRAINING, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (100)	Small (119)	Large (41)	Small (65)
10 or less	4		4	6
11-20	8	1	5	3
21-30	13	9	12	18
31-40	8	26	10	22
41-50	15	28	37	23
51-60	13	21	17	14
61-70	16	8	5	6
71-80	8	2	2	3
81-90	3	3		2
91 or more	12	3	7	3

$X^2 = 60.94$ df = 27 p less than .01

Academic Preparation of Elementary Teachers

Language arts. There was a significant relationship between the number of undergraduate credit hours the elementary teachers had in language arts and type of graduating institution. Table 28 indicates that a higher proportion of graduates from small private teacher-education institutions than from the other schools had from 31 to 70 credit hours in language arts, whereas a higher proportion of graduates from other institutions had 30 or fewer credit hours, and a higher proportion of graduates from public institutions had 71 or more credit hours. The majority of elementary teachers had from 11 to 30 credit hours in language arts.

TABLE 28. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN LANGUAGE ARTS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (110)	Small (183)	Large (94)	Small (94)
10 or less	5	3	5	7
11-20	45	43	38	35
21-30	31	36	38	33
31-40	9	8	12	7
41-50	1	8	3	7
51-60	1		1	4
61-70	3			4
71-80	3	1		1
81-90	2	1	1	
91 or more	1	1		

$X^2 = 42.79$ df = 27 p less than .05

There was also a significant relationship between the number of undergraduate credit points the elementary teachers had in language arts and type of graduating institution. Table 29 indicates that a higher proportion of graduates from small private teacher-education institutions had 41 or more credit points. The majority of elementary teachers had from 11 to 50 credit points in language arts.

TABLE 29. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN LANGUAGE ARTS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (94)	Small (94)
10 or less	6	2	3	4
11-20	14	13	11	14
21-30	24	22	27	10
31-40	21	29	28	24
41-50	10	13	18	15
51-60	10	10	4	7
61-70	2	3	2	11
71-80	5	3	3	5
81-90	2	2	1	3
91 or more				

$X^2 = 37.44$ df = 27 p less than .10

Social studies. There was a significant relationship between the number of undergraduate credit hours the elementary teachers had in social studies and type of graduating institution. Table 30 indicates that a higher proportion of graduates from small private teacher-education institutions had 31 or more credit hours in social studies. The mode was 21 to 30 credit hours for all elementary teachers.

TABLE 30. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN SOCIAL STUDIES, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (110)	Small (178)	Large (94)	Small (94)
10 or less	11	4	4	4
11-20	19	33	32	31
21-30	55	48	48	37
31-40	13	12	12	18
41-50		2	2	7
51-60			2	1
61-70		1		1
71-80	1			
81-90				
91 or more	1			

$X^2 = 44.47$ df = 24 p less than .01

There was, however, no significant relationship between the number of undergraduate credit points the elementary teachers had in social studies and type of graduating institution. Table 31 indicates that the majority of all elementary teachers had from 11 to 40 credit points, with the minority being fairly evenly distributed between 41 to 91 or over and 10 or under credit points.

TABLE 31. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN SOCIAL STUDIES, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (94)	Small (94)
10 or less	9	5	5	4
11-20	20	20	14	10
21-30	18	21	20	15
31-40	20	20	22	19
41-50	16	14	18	18
51-60	6	12	10	13
61-70	6	5	2	13
71-80	2	2	5	4
81-90			2	1
91 or more	2	2	1	3

$X^2 = 32.29$ df = 27 p greater than .10

Natural science. There was a significant relationship between the number of undergraduate credit hours the elementary teachers had in natural science and type of graduating institution. Table 32 indicates that a higher proportion of graduates from small public teacher-education institutions had 11 or more credit hours in natural science. The large majority of elementary teachers had 10 or fewer credit hours in natural science.

TABLE 32. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN NATURAL SCIENCE, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (94)	Small (94)
10 or less	87	71	81	86
11-20	9	27	19	12
21-30	2			2
31-40	2	1		
41-50		1		
51-60 or more		1		

$X^2 = 30.09$ df = 15 p less than .05

There was, however, no significant relationship between the number of undergraduate credit points the elementary teachers had in natural science and type of graduating institution. Table 33 indicates that the majority of elementary teachers had 10 or fewer credit points in natural science.

TABLE 33. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS UNDERGRADUATE CREDIT POINTS IN NATURAL SCIENCE, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (94)	Small (94)
10 or less	69	54	63	59
11-20	22	29	27	30
21-30	4	11	11	9
31-40	2	5		2
41-50		1		
51-60	1			1
61-70				
71-80	1			
81-90				
91 or more	2			

$X^2 = 28.84$ df = 21 p greater than .10

Physical science. There was a significant relationship between the number of undergraduate credit hours the elementary teachers had in physical science and type of graduating institution. Table 34 indicates that a higher proportion of graduates from public teacher-education institutions had 11 or more credit hours. The majority of elementary teachers had 10 or fewer credit hours in physical science.

TABLE 34. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN PHYSICAL SCIENCE, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (110)	Small (172)	Large (94)	Small (94)
10 or less	76	72	96	88
11-20	21	11	4	12
21-30	2	16		
31-40	1			
41-50		1		

$X^2 = 64.08$ df = 12 p less than .01

There was also a significant relationship between the number of undergraduate credit points the elementary teachers had in physical science and type of graduating institution. Table 35 indicates that a higher proportion of graduates from public teacher-education institutions than from the other schools had 11 or more credit points, while the lowest proportion of teachers having 11 or more credit points were graduates from large private institutions. The majority of elementary teachers had 10 or fewer credit points in physical science.

TABLE 35. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN PHYSICAL SCIENCE, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (110)	Small (172)	Large (94)	Small (94)
10 or less	67	58	88	71
11-20	20	18	11	16
21-30	9	11	1	7
31-40	3	8		3
41-50	1	4		1
51-60		1		1

$X^2 = 38.03$ df = 15 p less than .05

Mathematics. There was no significant relationship between the number of undergraduate credit hours the elementary teachers had in mathematics and type of graduating institution. Table 36 indicates that almost all elementary teachers had 10 or fewer credit hours in mathematics.

TABLE 36. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS UNDERGRADUATE CREDIT HOURS IN MATHEMATICS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (94)	Small (94)
10 or less	100	95	98	98
11-20		3	2	2
21-30		1		
31-40				
41-50		1		

$X^2 = 9.18 \cdot df = 9$ p greater than .10

There was, however, a significant relationship between the number of undergraduate credit points the elementary teachers had in mathematics and type of graduating institution. Table 37 indicates that a higher proportion of graduates from large public teacher-education institutions had 10 or fewer credit points. The large majority of elementary teachers had 10 or fewer credit points in mathematics.

TABLE 37. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN MATHEMATICS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (94)	Small (94)
10 or less	93	72	85	83
11-20	6	24	13	14
21-30	1	2	2	3
31-40		1		
41-50				
51-60				
61-70		1		

$X^2 = 26.16$ df = 12 p less than .01

Arts. There was a significant relationship between the number of undergraduate credit hours the elementary teachers had in the arts and type of graduating institution. Table 38 indicates that a higher proportion of graduates from small public and private teacher-education institutions than from the other schools had 11 or more credit hours. The majority of elementary teachers, except those graduating from small public and private institutions, had 10 or fewer credit hours in the arts.

TABLE 38. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN THE ARTS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (109)	Small (173)	Large (94)	Small (94)
10 or less	82	32	64	38
11-20	16	54	29	55
21-30	2	10	3	5
31-40	1	2	1	
41-50		1		1
51-60				
61-70			1	
71-80			1	
81-90		1	1	
91 or more		1		

$X^2 = 95.09$ df = 24 p less than .01

There was also a significant relationship between the number of undergraduate credit points the elementary teachers had in the arts and type of graduating institution. Table 39 indicates that a higher proportion of graduates from small public and private teacher-education institutions had 11 or more credit points. The majority of elementary teachers, except those graduating from small public and private institutions, had 20 or fewer credit points in the arts.

TABLE 39. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN THE ARTS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (109)	Small (173)	Large (94)	Small (94)
10 or less	33	17	34	26
11-20	43	24	37	21
21-30	19	27	13	26
31-40	2	20	10	14
41-50	2	5	2	10
51-60	1	3		2
61-70		2		
71-80		2	1	2
81-90				
91 or more		1	3	

$X^2 = 72.07$ df = 24 p less than .01

Technical subjects. There was a significant relationship between the number of undergraduate credit hours the elementary teachers had in technical subjects and type of graduating institution. Table 40 indicates that a higher proportion of graduates from small public teacher-education institutions than from the other schools had 11 or more credit hours. The majority of elementary teachers, except those graduating from small public institutions, had 10 or fewer credit hours in technical subjects.

TABLE 40. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN TECHNICAL SUBJECTS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (94)	Small (93)
10 or less	51	21	73	55
11-20	35	42	21	37
21-30	6	29	4	2
31-40	3	5		2
41-50	4	2		
51-60	2	2	1	
61-70				
71-80				
81-90				
91 or more		1		

$X^2 = 114.98$ df = 18 p less than .01

There was also a significant relationship between the number of undergraduate credit points the elementary teachers had in technical subjects and type of graduating institution. Table 41 indicates that a higher proportion of graduates from small public teacher-education institutions had 11 or more credit points. The majority of elementary teachers, except those graduating from small public teacher-education institutions, had 20 or fewer credit points in technical subjects.

TABLE 41. PERCENTAGE DISTRIBUTION OF ELEMENTARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN TECHNICAL SUBJECTS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (110)	Small (173)	Large (94)	Small (93)
10 or less	24	6	41	33
11-20	29	21	34	32
21-30	26	24	19	22
31-40	12	23	1	5
41-50	4	13		6
51-60	1	4	1	1
61-70	2	3		
71-80	1	3	2	
81-90	1	1		
91 or more	1	2	1	

$X^2 = 111.06$ df = 27 p less than .01

Academic Preparation of Secondary Teachers

Single teaching area. There was no relationship between the number of undergraduate credit hours the secondary teachers had in their single subject-matter teaching area and type of graduating institutions. Table 42 indicates that the majority of secondary teachers who were teaching in only one subject-matter area, except those graduating from small private institutions, had 41 or more credit hours in their teaching area. (Subject-matter areas are indicated in Tables 17-19.)

TABLE 42. PERCENTAGE DISTRIBUTION OF SECONDARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN THEIR SINGLE SUBJECT-MATTER TEACHING AREA, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (66)	Small (68)	Large (17)	Small (25)
10 or less	3	3		12
11-20	8	1		4
21-30	14	10	24	12
31-40	15	7	24	28
41-50	17	25	24	8
51-60	15	15	6	12
61-70	15	19	6	16
71-80	5	6		8
81-90	3	3	6	
91 or more	6	10	11	

$X^2 = 15.55$ df = 27 p greater than .10

There was also no relationship between the number of undergraduate credit points the secondary teachers had in their single subject-matter teaching area and type of graduating institution. Table 43 indicates that the majority of secondary teachers who were teaching in only one subject-matter area, except for those graduating from small private institutions, had 81 or more credit points in their teaching area.

TABLE 43. PERCENTAGE DISTRIBUTION OF SECONDARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN THEIR SINGLE SUBJECT-MATTER TEACHING AREAS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (66)	Small (68)	Large (17)	Small (25)
10 or less	3	1		8
11-20	3	4		4
21-30	2	1	6	
31-40	8		6	8
41-50	3	6	12	8
51-60	5	1	6	12
61-70	5	11	6	16
71-80	15	3	12	4
81-90	12	15	12	8
91 or more	45	57	41	32

$X^2 = 14.34$ df = 27 p greater than .10

Multiple teaching area. There was no relationship between the number of undergraduate credit hours the secondary teachers had in their multiple subject-matter teaching areas and type of graduating institution. Table 44 indicates that the majority of secondary teachers who were teaching in more than one subject-matter area, except those graduating from small private institutions, had 51 or more credit hours in their teaching areas.

TABLE 44. PERCENTAGE DISTRIBUTION OF SECONDARY TEACHERS BY UNDERGRADUATE CREDIT HOURS IN THEIR MULTIPLE SUBJECT-MATTER TEACHING AREAS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit hours	Type of institution			
	Public		Private	
	Large (22)	Small (31)	Large (14)	Small (26)
10 or less				
11-20	9	3		8
21-30	5	16	21	12
31-40	5	16	14	27
41-50	5	13	7	19
51-60	9	6	21	15
61-70	23	13	7	8
71-80	5	10	21	4
81-90	18	10		
91 or more	23	13	7	8

$X^2 = 28.07$ df = 24 p greater than .10

There was also no significant relationship between the number of undergraduate credit points the secondary teachers had in their multiple subject-matter teaching areas and type of graduating institution. Table 45 indicates that the majority of secondary teachers who were teaching in more than one subject-matter area, except those graduating from small private institutions, had 81 or more credit points in their teaching areas.

TABLE 45. PERCENTAGE DISTRIBUTION OF SECONDARY TEACHERS BY UNDERGRADUATE CREDIT POINTS IN THEIR MULTIPLE SUBJECT-MATTER TEACHING AREAS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Credit points	Type of institution			
	Public		Private	
	Large (22)	Small (31)	Large (14)	Small (26)
10 or less	5			
11-20				
21-30	3	6	7	4
31-40		13	14	12
41-50	9	10	7	4
51-60	5	6		19
61-70		6	14	8
71-80	5	3	7	19
81-90	9	16	7	
91 or more	64	39	43	35

$X^2 = 27.09$ df = 24 p greater than .10

Professional Performance Related to Type of Graduating Institution

In analyzing the relationship between size and type of graduating institution, and performance of graduates, data were obtained regarding two indices of teaching performance, according to type of graduating institution. The first index (MTAI score) was a measure of pupil-teacher rapport, which was taken to be in indirect measure of teaching effectiveness. The second index (principal's rating) was a measure of over-all teacher effectiveness.

MTAI scores. There was a significant relationship between teachers' MTAI scores and type of graduating institution. Table 46 indicates that a higher proportion of graduates from small private teacher-education institutions had MTAI scores of zero or lower. Fifty per cent of this group and a majority of graduates from other institutions had MTAI scores of one or higher. (MTAI scores range from -150 to 150, the higher scores indicating good rapport with pupils.)

TABLE 46. PERCENTAGE DISTRIBUTION OF TEACHERS BY MTAI SCORES, ACCORDING TO TYPE OF GRADUATING INSTITUTION

MTAI scores	Type of institution			
	Public		Private	
	Large (195)	Small (258)	Large (126)	Small (158)
-150 to -80			2	
-79 to -60	5	3		6
-59 to -40	4	7	7	9
-39 to -20	15	10	16	14
-19 to 0	17	12	17	22
1 to 20	20	23	17	18
21 to 40	17	20	13	15
41 to 60	13	16	20	11
61 to 80	7	9	8	5
81 to 150	3	1	1	1

$X^2 = 43.92$ df = 27 p less than .05

Principals' ratings. There was a significant relationship between teachers' ratings by their principals and type of graduating institution. Table 47 indicates that a higher proportion of graduates from the intermediate size teacher-education institutions (small public and large private) were rated in the ninth decile or higher, and a higher proportion of graduates from large public and small private institutions were rated in the fifth decile or lower. The majority of all teachers were rated in the eighth decile or higher.

TABLE 47. PERCENTAGE DISTRIBUTION OF TEACHERS BY RATINGS BY PRINCIPALS, ACCORDING TO TYPE OF GRADUATING INSTITUTION

Principal decile ratings	Type of institution			
	Public		Private	
	Large (221)	Small (304)	Large (142)	Small (172)
1	1		1	
2	1	1	1	2
3	3	2	3	3
4	5	6	2	5
5	10	5	4	9
6	8	11	12	10
7	11	12	10	16
8	23	18	16	17
9	31	29	27	28
10	8	18	24	12

$X^2 = 43.92$ df = 27 p less than .05

Professional and Academic Undergraduate Preparation Related to Teaching Performance

In analyzing the relationship between teaching performance and professional and academic undergraduate preparation, data were obtained regarding professional and academic credit hours and credit points, according to two indices of teaching performance. These were the same two indices (MTAI scores and principals' ratings) discussed in the previous section.

Neither the professional nor the academic preparation of teachers was found to be significantly related to the above two indices of teaching performance. The data are summarized in Table 48.[6]

Inspection of Table 48 indicates that only two analyses out of a possible 20 yielded a relationship between preparation and performance that was significant at the five per cent or higher level of confidence and these two significant relationships tend to lose significance in light of the 18 non-significant relationships.

[6]Frequency distribution tables and obtained chi square values for the 20 separate analyses are available in a separate research report (See bibliography.).

TABLE 48. OBTAINED CHI SQUARE VALUES FOR THE PROFESSIONAL AND ACADEMIC PREPARATION OF TEACHERS, ACCORDING TO TWO INDICES OF TEACHING PERFORMANCE

Professional and academic preparation	Chi square	Degrees of freedom	Level of significance
MTAI			
Secondary teachers			
Professional courses			
Single teaching area			
Credit hours	4.71	8	NS[1]
Credit points	15.10	16	NS
Multiple teaching areas			
Credit hours	11.40	8	NS
Credit points	10.19	8	NS
Academic courses			
Single teaching area			
Credit hours	17.81	16	NS
Credit points	19.48	16	NS
Multiple teaching areas			
Credit hours	12.36	16	NS
Credit points	12.24	16	NS
Elementary teachers			
Professional courses			
Credit hours	6.76	8	NS
Credit points	10.17	8	NS
PRINCIPALS' RATINGS			
Secondary teachers			
Professional courses			
Single teaching area			
Credit hours	1.98	4	NS
Credit points	7.01	8	NS
Multiple teaching areas			
Credit hours	13.55	4	.01
Credit points	.42	4	NS
Academic courses			
Single teaching area			
Credit hours	11.34	8	NS
Credit points	18.26	8	.05
Multiple teaching areas			
Credit hours	8.47	8	NS
Credit points	7.45	8	NS
Elementary teachers			
Professional courses			
Credit hours	6.43	8	NS
Credit points	10.53	8	NS

[1]Not significant at the .10 level of confidence.

SUMMARY

An investigation was made of the preparation and performance of public school teachers in the state of Indiana. The sample consisted of all teachers who received the bachelor's degree from the 24 Indiana colleges and universities with standard accreditation for teacher education. These teachers had been graduated during the 1954 calendar year and were teaching three years later (1956-1957) in Indiana public schools.

The purpose of the investigation was to supply evidence needed to determine whether there is a relationship between (1) size and type of graduating institution and teacher preparation; (2) size and type of institution and teacher performance; and (3) teacher preparation and teacher performance.

The data sources consisted of (1) the Minnesota Teacher Attitude Inventory (MTAI), (2) a teacher-rating form, (3) a questionnaire, (4) academic transcripts, and (5) state department records.

All measuring instruments were administered by mail. The per cent of returns was 83.9 per cent for data supplied by teachers (MTAI and questionnaire) and 95.1 per cent for data supplied by principals (rating form). Transcripts were obtained for all subjects.

In analyzing the data, variables were grouped so as to retain a maximum refinement of classification while at the same time avoiding a large number of cells with trivial frequencies. These frequency data were then analyzed by means of the chi square statistical technique.

A significant relationship was found to exist between type of graduating institution and the following teacher variables:

1. Personal characteristics, including sex, age, marital status, and parental income.

2. High school credits in language arts, social studies, science and mathematics, and technical courses.

3. Teaching background, including salary, experience, size of school, and size of community in which teaching; and for secondary teachers, subject-matter teaching area and number of areas taught.

4. Total undergraduate credit hours and number of transferred credit hours.

5. Undergraduate professional preparation, including credit hours and credit points for elementary teachers, and credit points for secondary teachers.

6. Undergraduate academic preparation of elementary teachers, including credit hours and credit points in language arts, physical science, the arts, and technical subjects; credit hours in social studies and natural science; and credit points in mathematics.

7. Professional performance, including rapport with pupils (MTAI score) and principal's ratings of over-all teacher effectiveness.

No significant relationship was found to exist between type of graduating institution and the following teacher variables:

1. Religious affiliation, parental occupation, and teaching level.

2. Total undergraduate credit points and credit point ratio.

3. Secondary teachers' credit hours of professional preparation.

4. Elementary teachers' credit hours in mathematics and credit points in social studies and natural science.

5. Credit hours and credit points of secondary teachers of single and of multiple subject-matter areas in their area of teaching.

The chi square statistic indicates only whether there is or is not a significant relationship. Any statement regarding the direction of a relationship must be based upon simple inspection of the data. The way in which one inspects data tables is fairly arbitrary, and results of the inspection are subject to human error, such as selective perception. Nevertheless, if the limitations of the inspection technique are kept in mind, summary statements regarding the direction of the above significant relationships may be of value.

1. In personal characteristics, a higher proportion of graduates from public than from private institutions were males; a higher proportion of graduates from intermediate size institutions (small public and large private) were married (three years after graduation); and a higher proportion of graduates from private institutions were older upon receipt of their bachelor's degree, and had had parents with a low income.

2. In high school academic preparation, a higher proportion of graduates from large private institutions had no high school credits in language arts, science, and mathematics; a higher proportion of graduates from private institutions had no high school credits in technical courses; and a higher proportion of graduates from large public and private institutions had no high school credits in social studies.

3. In teaching background, a higher proportion of graduates from public institutions taught in a single subject-matter area, taught vocational subjects, and taught vocational

subjects only or social studies only; a higher proportion of graduates from private institutions taught language arts, physical education, and mathematics, and taught language arts only, music only, or mathematics only; a higher proportion of graduates from large public institutions were new teachers, that is, they had not taught prior to receipt of the bachelor's degree, and were teaching in large school systems; a higher proportion of graduates from large public and private institutions were teaching in large communities; and a higher proportion of graduates from small private institutions were receiving lower salaries.

4. In undergraduate academic preparation, a higher proportion of graduates from small public institutions had more than the minimum number of credit hours required for graduation; and a higher proportion of graduates from large private institutions had more transfer credits.

5. In undergraduate professional preparation, a higher proportion of elementary teachers graduating from small private institutions had 40 or less credit hours and 70 or less credit points of professional preparation; and a higher proportion of secondary teachers graduating from small private institutions had 40 or less credit points of professional preparation.

6. In undergraduate academic preparation of elementary teachers, a higher proportion of graduates from public institutions had 11 or more credit hours and credit points in physical science; a higher proportion of graduates from large public institutions had 10 or fewer credit points in mathematics; a higher proportion of graduates from small public institutions had 11 or more credit hours in natural science and technical subjects and 11 or more credit points in technical subjects; a higher proportion of graduates from small public and private institutions had 11 or more credit hours and credit points in the arts; and a higher proportion of graduates from small private institutions had from 31 to 70 credit hours and 41 or more credit points in language arts and 31 or more credit points in social studies.

7. In professional performance, a higher proportion of graduates from small private institutions obtained negative MTAI scores; and a higher proportion of graduates from the intermediate size institutions (small public and large private) were judged by their principals to be in the ninth decile or higher in over-all teacher effectiveness.

No significant relationship (with two exceptions in 20 separate analyses) was found to exist between credit hours and credit points in academic and/or professional courses, and two indices of teaching performance (MTAI scores and principals' ratings).

CONCLUSION

It is concluded that graduates from different sizes and types of teacher-education institutions do differ in their preparation for teaching and in professional performance, as reflected by scores on the Minnesota Teacher Attitude Inventory and by their principals' ratings of over-all teacher effectiveness. They also differ in certain background dimensions prior to entering the institutions from which they were graduated. The preparation and background differences are not, however, sufficiently systematic, nor are the two performance indices sufficiently inclusive to warrant the conclusions that any one size or type of teacher-education institution is producing better teachers, or that there is no relationship between the preparation of teachers and their subsequent teaching performance.

BIBLIOGRAPHY

Cook, W. W.; Leeds, C. H.; and Callis, R., Minnesota Teacher Attitude Inventory, The Psychological Corporation, New York, 1951.

Popham, W. J., and Standlee, L. S., Out-of-School Activities and Professional Performance of Teachers, Bulletin of the School of Education, Indiana University, vol. 34, no. 2, Bloomington, July, 1958.

Standlee, L. S.; Popham, W. J.; and Mavrides, E., Preparation and Performance of Indiana Teacher-Training Graduates, Research Report No. 1, School of Education, Indiana University, Contract 6400, U.S. Office of Education, Department of Health, Education, and Welfare, Washington, D.C., March, 1958.

Standlee, L. S., and Popham, W. J., Professional and Academic Preparation of Teachers Related to Two Indices of Teaching Performance, Research Report no. 3, U.S. Office of Education, Department of Health, Education, and Welfare, Washington, D.C., April, 1958.

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